

REMARKS

Claims 1-9 are pending in the present application and stand rejected in the Outstanding Office Action. The Examiner is respectfully requested to reconsider and withdraw the rejections in view of the amendments and remarks contained herein.

REJECTION UNDER 35 U.S.C. § 103

The Outstanding Office Action states that Claims 1-9 are rejected under 35 U.S.C. §103(a) as being unpatentable over Sanders et al. U.S. 5,132,512 in view of Couch et al. WO 91/16166. The Office Action states that Sanders teaches two gas flows for stabilizing the arc and Couch teaches a swirl unit which creates two gas flows from a single unit and concluded that it is obvious to use a single unit to create the two gas flows in Sanders in view of Couch. Applicants respectfully request reconsideration of these rejections in light of the following remarks.

Sanders et al. is directed to a shield for use in protecting the tip, or nozzle, while also directing a secondary gas flow to stabilize the plasma arc. Sanders et al. is exclusively limited to secondary gas flow only, and no teaching or suggestion exists as to the control of plasma gas flow.

Conversely, Couch et al. is directed to a gas distributor that provides a chamber to choke the flow of plasma gas entering the plasma chamber to create a pressure drop that improves cut quality. Couch et al. is exclusively limited to plasma gas flow only, and no teaching or suggestion exists as to the control of secondary gas flow.

Since Sanders et al. does not mention plasma gas flow and is limited to secondary gas flow only, and Couch et al. does not mention secondary gas flow and

is limited to plasma gas flow, Applicants submit that there can be no teaching, suggestion, or motivation to combine these references. Moreover, both the shield of Sanders et al. and the gas distributor of Couch et al. are insulating members and are not electrically conductive.

Couch et al. cannot possibly suggest that Sanders et al. be modified to combine the plasma gas swirling function and the secondary gas passage function when Sanders et al. is silent as to the flow of plasma gas into the plasma chamber, let alone the swirling of plasma gas. Although the Outstanding Office Action suggests that Sanders et al. be modified with the single structure of Couch et al., Applicants remain unclear as to how this could actually happen. If the single structure of Couch et al. would replace the shield and the cap 20 of Sanders et al., there would still be no means to direct the flow of plasma gas into the plasma chamber. If the single structure of Couch et al. would replace the tip of Sanders et al., then there would be no need for the shield to direct the flow of secondary gas. The elimination of the shield would leave the tip exposed, thus defeating the very purpose of the invention in Sanders et al. Therefore, Applicants submit that a combination of Couch et al. and Sanders et al. is not even possible without defeating the claimed purpose of the Sanders et al. invention.

Additionally, since the primary function of the swirl ring structure of Couch et al. is to create a chamber to choke the flow of plasma gas entering the plasma chamber, no motivation is provided that the passages within the swirl ring structure should be used to direct gases some place other than the plasma chamber.

Further, the MPEP cautions that the fact that references can be combined or modified is not sufficient to establish prima facie obviousness. MPEP 2143.01. While the Outstanding Office Action suggests that Sanders can be modified, "there must be a suggestion or motivation in the reference to do so." Id. Since Sanders et al. and Couch et al. are directed to two completely different and exclusive inventions and do not use a tip or nozzle itself either to create a swirled plasma gas or to provide a secondary gas passage, they cannot render obvious Claims 1 to 6, which require a tip to have at least one or a plurality of swirl passage(s)/hole(s), and/or at least one or a plurality of secondary gas passage(s)/hole(s). Nor do they render obvious Claim 7, which requires a single-piece body defining a plurality of plasma gas passageways and a plurality of secondary gas passageways. Accordingly, Applicants respectfully request that the rejection of Claims 1-7 be withdrawn.

As for Claim 8, Applicants submit that Sanders et al. and Couch et al. cannot render Claim 8 obvious because they do not disclose a tip having at least one swirl passageway and at least one secondary gas passageway, let alone using a set of tips to maintain a constant flow ratio of secondary gas to the plasma gas across a range of operating amperages, as recited in the amended Claim 8. Accordingly, Applicants respectfully request that the rejections of Claims 8 and its dependent claim, Claim 9, be withdrawn.

CONCLUSION

It is believed that all of the stated grounds of objection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully

request that the Examiner reconsider and withdraw all presently outstanding objections. It is believed that a full and complete response has been made to the outstanding Office Action, and as such, the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (314) 726-7524.

Respectfully submitted,

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